April 1986

Texas Union MicroCenter

Catalyst

Volume 3 Number 1

THE MACWORLD EXPO.

By Don Parsons

Well, another MacWorld Expo has come and gone. One thing that sets this one apart from all of the others is that I got to attend this one. Since this was not the first MacWorld Expo, I remember all too well what it was like to not have gone. So, I decided to share my experience with those who did not get the opportunity.

In addition to the MacWorld Expo, the Apple II World Expo, and the Apple World Conference was held in San Francisco at the same time. It was a MacEnthusiast's heaven.

Upon my arrival, I quickly discovered just how much I had underestimated the size of this particular event. On my way to the Expo, I had every intention of seeing everything that there was to see, in addition to attending several of the seminars that were being given. It was overwhelming to see how big the MacWorld Expo really was. I immediately decided that if I were to come anywhere close to covering the entire MacWorld Expo in just three days, I would have to come up with a very precise strategy. Well, I think that I did a reasonably good job of accomplishing that task, even though I did not get to spend too much time with any one MacVendor. To give you a more specific idea of the size of the Expo, think back to some of the Austin Computer Fairs that have been held in our Municipal Auditorium and increase the floor space by at least a factor of two. As far as density of vendors and spectators, triple what was at the local computer fairs and you will have a rough estimation.

There were quite a few products introduced to the Macintosh market. In fact, everything that you could possibly get or want for your Mac was at the Expo. Many of the new Apple products were improved versions of previous models. For example the Macintoh Plus, LaserWriter Plus, double sided external drive.

Some of the more impressive new third party Mac products include: the MDIdeas 20 and 30MB hard disk drives*, the AST 74MB hard disk drive (upgradable to 370MB) with a 60MB tape backup system*, the Levco 68020/68881 upgrade, the Hyperdrive 2000, and MacSpin (locally developed by Andrew Donaho).

Most of the products one could see (or buy) for the Mac were not new. In some cases, our familiarity with those products was limited to magazines adds and articles. The Expo gave me the

(Continued page 2)

MACINTOSH PLUS UPGRADES - SIGN UP IN THE STORE NOW!

Internal 800K Drive Kit $225.00

Allows current Macintosh owner (512K) to upgrade to internal 800K disk drive and new ROM. You must have a minimum of 512K to run the drive.

Kit includes 128K ROM, 800 internal drive, System Tool disk, Macintosh Plus Owner's Manual.

Macintosh Plus Logic Board Kit

$590.00 Mac 128K*

$445.00 Mac 512K*

Enables current Macintosh owner (128K or 512K) to upgrade to full Macintosh Plus, including new logic board with 1 megabyte RAM and SCSI port. *It requires previous or concurrent installation of Macintosh Plus Disk Drive Kit.*

Macintosh 128k owners do not need 512K Memory Expansion Kit when purchasing Logic Board Kit.

Kit includes 1 megabyte RAM, rear housing with SCSI and mini-circular 8 ports, one Macintosh Plus Peripheral Adaptor, System Tools disk, and Macintosh Plus Owner's Manual.

*Prices based on hardware exchanged

Macintosh Plus Keyboard $95.00

Enables current Macintosh owners to add new integrated keyboard with numeric keypad and directional keys.

CONTENTS

Back of the Mac	2	FYI	6
ROMS	3	Mailing Labels	7
RAMS	4	Class Schedule	7
Modems	5	Software Updates	8
Pagemaker	6	Price List	9

chance to see the product first hand and talk to representatives of the company that produced it. In other cases some products had been on the market for a while, but most of us had no idea they existed. So from that standpoint, they might as well have been new.

There were also many informative seminars that one could attend. The range of topics spanned from the very basic use of software like MacWrite and MacPaint, to developing software for the Macintosh. The most heavily attend seminars were those directed toward people using the Macintosh for business or desktop publishing.

One section of the MacWorld Expo was devoted exclusively to the University Consortium. In this section, we got a chance to see some of the software and hardware that has been produced on the Mac within some of the universities around the nation. An example of something that another university has produced, was a system that used a Macintosh to control a video camera and a video laser disk player. The demonstration that I saw showed how someone could use the system to create a controlled recording of some phenomenon. Then a person could use the Mac to edit a presentation of that recording on the laser disk player. You could choose exactly which parts of the recording were shone (frame by frame). Not only could you specify which parts of the disk were played back in the presentation, you could also control the order in which each part was shown, the speed that was used when playing it back (including stopping on a single frame), and you could even play a sequence backwards. You were given complete random access to the laser disk. This seemed like it would be a powerful educational tool.

If you ever get the opportunity to go to a future MacWorld Expo, be sure to take some extra spending money because you can find some spectacular prices. At least two of the major data base software companies were having a price war. The Expo price for OverVUE was $149.00 and Odesta Helix was being sold for as low as $89.00!

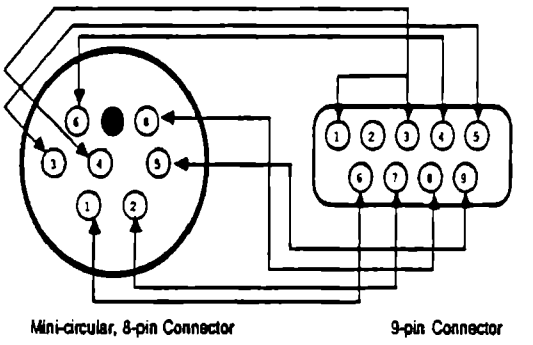
If you have never attended a MacWorld Expo, my recommendation is that you try to attend one in the future. The Expo offers a way to find out what products are available and what can be accomplished with a Mac. It was amazing to see the capabilities of the Macintosh. I felt that the Expo was well worth my time, effort, and money.

* Uses the SCSI interface port.

BACK OF THE MAC

By Mike Puckett

In this issue of The Catalyst, you have been given a somewhat large amount of information regarding the inner-workings of your Macintosh. Here, I, too, will attempt to stay on the same track, but I will pursue a slightly different path . Namely, I would like to talk about the "back" of the Macintosh. From a functional standpoint, the new Macs' backside is not entirely different from the older Macs'. As a matter of fact, they are identical functionally, except for one thing: the Small Computer Systems Interface (SCSI) port. The SCSI port is the relatively large 25-pin port. The Plus's external disk drive port, mouse port, and sound jack are absolutely identical to their counterparts on earlier Macs (except that the sound jack is now on the opposite side, near the mouse port). The serial ports, which are used for modems, printers, and some hard disks, are almost identical functionally, but have a couple of minor differences.



First, the serial ports on the Macintosh Plus are not 9-pin. Instead, they are 8-pin. But, not only are they 8-pin, they are mini-circular 8-pin. This, of course, means that products which have been designed to plug into the older style, 9-pin serial ports will have to go through an adapter. The pin-outs for constructing such an adapter are listed in the figure at the end of this article. As of this writing, however, the 8-pin mini-circular connectors are not readily available. And consequently, neither are pre-fabricated cables. By the time you read this, the MicroCenter is hoping that that situation will be rectified.

The other main difference in the Macintosh Plus serial ports is that they, obviously, are missing something (originally, there were 9 pins, now there are only 8, something obviously got taken out). The function that is missing is power. This means that devices such as ThunderScan, will not simply plug into the Plus with an adapter cable. Owners of ThunderScan

who buy Plus's, or upgrade their original machines, will have to contact ThunderScan to see what options are available to them. There are other, less known, peripheral devices that fall under the same category as ThunderScan. So, if you are a Macintosh Plus owner, before you purchase anything that plugs into one of the serial ports, make sure that that device has its own power supply.

Now, as you have probably heard, many times over, the SCSI port is a parallel port that is especially useful for mass storage devices. Hence, instead of just re-hashing the same story, I will attempt to give you some different information. The first piece of information I would like to convey and for now anyway, probably the most important. And that is: THE 25-PIN SCSI PORT IS NOT TO HAVE ANYTHING BUT A TRUE SCSI DEVICE PLUGGED INTO IT! Plugging other kinds of devices, such as 25-pin serial printers, into the SCSI can be extremely hazardous to your Plus's health. If you do not plan on plugging anything into the SCSI port for a while it might be benificial to go to your local Radio Shack store and pick up a 25-pin dust cap.

SCSI has given the Macintosh a "bus." A bus, simply put, is a means for standardizing the way in which various devices can communicate with each other. In the definition of SCSI, up to 8 devices (computers, peripherals, and/or peripheral controllers) can be connected at once. As such, any single pair of devices on the bus can be in communication at any given time. Of the pair, one device is the "master," and the other is the "slave." The master takes control of the bus and selects the slave it needs. At this point, if the slave is not doing anything else, it responds. This pair then has control of the bus for as long as necessary. While in control, the master issues instructions and the slave carries them out. Generally, these commands are very high-level because SCSI peripheral controllers are relatively intelligent. As an example, let's say that attached to your Plus via the SCSI port is a hard disk. Now, on this hard disk you have a number of applications you would like to run. So, from the Finder you double-click on one of the applications. At that point, the Plus and hard disk become the master-slave pair. Remember that the Plus is communicating with the hard disk through an intelligent controller, which essentially means that the Plus doesn't have to do much except say "Hey, hard disk controller give me the program the user just double-clicked from the Finder." From a high-level point of view, this is always what happened. But, if we had looked a little lower, we would have found out that the Macintosh itself was having to do a lot of the manual calculations as to where the program actually resided on the storage medium. (If you are interested, what I am trying to say is that the Plus needs only to specify a logical block address and the number of bytes necessary, and the controller does the rest. In the past, the driver routines have been generally responsible for translating logical block addresses into low-level disk locations.)

SCSI is fast. The rate actually varies from implementation to implementation, but on the Plus, the transfer rate is 2.56 per second. To get an idea of how fast this is, think about ramdisks. They move at speeds of about 4 per second. In an optimal situation, a ramdisk can be almost twice as fast a SCSI disk. However, with its intelligent controllers, the SCSI disk can approach virtual transfer rates of 4 per second. (For reference, hard disks that use the serial ports generally have transfer rates of about 0.18 per second, and Apple's Hard Disk 20 operates at about 0.5 per second.)

NEED HELP? CALL THE MICROCENTER HOTLINE 471-6227 MON-FRI, 8AM-5PM

WHAT'S IN THE NEW ROM'S

By Tom May

ROM or "read only memory" is a term given to integrated circuits (chips) that have had their "instructions" permanently burnt on to them. RAM or "random access memory" refers to dynamic "memory" that can be written to or read from by the operating system or any application. For instance when MacWrite or MacPaint is opened, those instructions are immediately loaded into RAM memory not ROM. RAM is volatile, if the power to the computer is turned off, all the instructions residing in RAM will disappear, while the ROM instructions can never be altered. That's why most small computers have some or all of their operating system installed on ROM chips.

The ROM chips in the MacIntosh contain the low level instructions that control such things as windows, menus, dialogs, graphics and the start up screen (picture of disk with blinking question mark). They are the backbone of the operating system. In fact, every standard graphic generated by the MacIntosh is done with ROM based instructions.

The new ROM chips that come with the

MacIntosh Plus contain 128K of information, as opposed to the 64K that the old ones had. The additional information contained in the new ROM's include the AppleTalk Driver, Serial Driver, System Font, Numerics Package, and the Elementary Functions Package; but in order to maintain compatibility between the old and new ROM's, these packages also reside in the System File, which means that single sided Mac+ disks will work in 512K Macs. Other packages also found in the new ROM's are the Zoom Box, HFS (Hierarchical Filing System), and the Hard Disk 20 Driver. Of course, with the Hard Disk 20 Driver residing in the new ROM's, owners of Apple Hard Disk 20's or 800K external drives who upgrade their ROM's could delete the disk based HD 20 file (from the System Folder).

Apple will package the new ROM's with the internal 800K disk drive upgrade kit, which the MicroCenter will sell for $225.00 (only available for 512K Macs and probably not until March).

EFFICIENT MAC MEMORY USAGE

By Eric Johnson

Running out of memory on a 128K Mac was a notorious problem. Those of you who still have a 128K know what I mean. Some seemingly simple task would result in an "OUT OF MEMORY" message, or it would take forever to do the operation. What a drag, just when you buy a computer, you are limited by its hardware! This is not a problem specific to the Mac. Any microcomputer that is purchased with a small amount of memory will have similar problems with certain programs. People soon began to realize the disadvantage of "Small Memory" and wanted to know how to get more. When the 512K Mac and MacPlus became available many of those problems were eliminated. What remains is the necessity to have good memory management.

The need for more efficiently used memory produced two products called RAM Disks and RAM Caches (to be explained later in the article). RAM (Random Access Memory) is not related to disk space and allows you to put anything in memory or take it out any time you wish. When a program operates from RAM it runs ten times faster than operating from disk. Both of these "Memory" uses have their advantages and disadvantages. This article will explain some of the reasons and purposes for using extra memory.

A RAM disk is a disk that is in memory rather than on a magnetic floppy. They imitate the real floppy in every way. Saving to a RAM disk or starting programs from such a disk is identical to a regular physical disk made of plastic and magnetic material. RAM disks are loaded into memory usually at the startup sequence of the machine, making it take a considerably longer time to complete normal startup. This is one reason that the RAM disk is not always the way to go when using RAM in a more efficient way. The RAM disk is useful for a "continually fast" system. With the System folder stored in the RAM disk you will be able to quit a program and return to the finder in 3 seconds. A further use for the RAM disk is to store the application you plan on using in the RAM disk as well as the system folder. This set-up allows the user to start the program (depending on what it is) in 3 to 10 seconds. MacPaint normally takes 19 seconds to load from a floppy, but from a RAM disk, it loads in 3 seconds. Loading the program quickly is nice, but the bulk of work is done during the entry of data into the application, and that operation can be slow during certain points of the program. When an application is in a RAM disk, all points of operation are at "high speed", and the data entry can be dealt with much quicker.

The first time I saw a RAM disk in action, I was thoroughly amazed. I was used to waiting for the program to load from a "singing disk drive." The operation seemed natural enough. Double click the program on the Desktop; watch the name go to the top of the screen while the desktop updated; then the program would setup its Menu on the top of the screen. At this point, the drive would really be "singing" while it read as much of the program as possible into memory. The programs default window would then show up signifying the loading was done. Later, when using a menu command, the program would make the disk drive read the disk once again because there wasn't enough memory to store the menu operations during the initial start-up.

The RAM disk also did all the sequences. Double clicking remained the same. The program would send its name up to the top of the screen, but this time the name stayed up there only for a fraction of a second if it could be seen at all. In the next phase, the menu seemed to "slap" onto the screen and the programs default window appeared instantly.

No doubt RAM disks are great, but there are built in limitations. The program operating from the RAM disk needs a certain amount of available memory (not in the RAM disk) to operate at its optimum. When a RAM disk has use of that memory for its disk, the memory is not available for the program. For example,

when a 350K disk is created, 162K is left for operation. 162K is not enough for some programs to operate efficiently, therefore it is advisable not to use so large a size. The size you choose for your RAM disk should be between 250K and 300K, this will leave a good 200K or more available. There are some programs that declare on the label that they need 512K to run so they should not be run in a RAM disk. If you have a MacPlus, then these limitations do not apply on account of the amount of memory available.

A RAM disk must also be treated just as an ordinary disk which means that to print, you need to have space available for the print file to be created. A print file is an invisible file that is created and deleted during the print process. It could potentially be 10-12K per page so a 7 page paper could generate a 70-84K print file. That requires 90K open on a disk (allowing some extra open space).

Finally, the RAM disk can't be used for "Safe" file storage. The memory that is used for a RAM disk is volatile. If the machine is turned off, or if the machine "bombs," the file is gone. A lost file would be a disaster if it were important. It is advisable not to store data in a RAM disk.

There are other methods of using the extra memory on your Mac. There is Switcher™ (not discussed in this article) and there are RAM "Cache" memory programs. The theory behind a RAM cache program is "keep as much of the last used programming information in as specified RAM a size as possible." This means that the last run program (like MacWrite or MacPaint) will stay in RAM until something else is run, then the previous program may be removed from memory if there wasn't enough room there. Of course, there may be enough memory for several programs to run. The MacPlus has a field in the control panel that can be used to set the size of RAM cache up to 768K. That much memory will not be necessary in most cases. Other programs that create RAM caches don't set the amount of memory, they just use all available memory.

A RAM disk will serve a different purpose from a RAM cache. The RAM disk is good for users who want to keep running fast all the time with possibly several programs in the disk at one time. An example is a programming development system. A system such as that can have up to 5 or 6 different tools to create a program. These tools are programs themselves and are run one after another in such a fashion that the output from one program is the input to the next. Obviously the RAM cache wouldn't work as well because the cache would push out tools as the later tools are loaded. That means the tools won't be there the next time that tool needs to be run. The RAM cache is good for people who will run only one program most of the day, or run each program for an extended period of time.

It sure is nice to have extra memory to play with but even a 512K Mac will run out of memory if worked hard enough. If you run out of memory with your 512K Mac then you may need to reconfigure your use of memory or upgrade to the MacPlus.

NOW THAT YOU HAVE A MODEM, WHAT CAN YOU DO WITH IT?

By Karen Quek

Many people buy modems to communicate with the University mainframe computers from the comfort of their own homes. They become invaluable especially towards the end of the semester, when the terminals are so swamped during the day that only by logging on after hours can anyone get any decent work done.

The following are the steps and equipment that you need to set up an off site terminal:

1. A modem (any brand will do)
2. A communications package (e.g. VersaTerm or Kermit)
3. A phone line
4. A terminal (your Mac works great !!)

Next thing you need to do is to set up the protocols correctly so that your terminal can send and receive the proper commands from the host computer (e.g CDC computer in UT).

For all mainframes and mini-computers on campus like the CDC, VAX (both VMS and Unix operating systems) and the DEC computers, the protocol is:

300 or 1200 baud access
8 bits, no parity, 1 stop bit.

For the IBM mainframe, the protocols are:

300 or 1200 baud access
7 bits, even parity, 1 stop bit.

After setting all this up, you can now call the host computer by dialing 471-9400. Wait for a little while for it to establish the connection and you will see the word CONNECT on screen. Hit the <RETURN> key a few times and you will get the familiar " CLASS= "

prompt. Continue with the regular log in procedure and there you have it, a terminal in your own home.

Please note : Certain keyboard commands may not be identical to the terminals on campus. Check with the Computation center for keyboard equivalents.

Naturally nobody wants to use the modem just for work or school. It would be nice to have a little fun as well. There are a lot of public electronic bulletin boards in Austin and the surrounding area that allow you to log on free of charge and communicate with other people, download public domain programs or even play games on them. Some bulletin boards charge a service fee for downloading programs from their boards or playing their games. Usually the fee is minimal and worth the money. In upcoming issues of the newsletter, we will give a more in-depth look at these bulletin boards and a description of the services they offer. For all those that want to start communicating with others without paying subscription fees, the MicroCenter has a list of the public boards and their phone numbers. Have fun and Happy Telecommunicating !!

PAGEMAKER

By Louise Dominque Hazel Belli

The capabilities of an electronic publisher like PageMaker, are exciting for the Mac User because you can become your own publihsing expert. You can produce finished, camera-ready newsletters and brochures with only a 512K Mac and a LaserWriter. PageMaker is a refreshing alternative to every paste-up artists nightmare...waiting for the waxer to heat up, having to face the indomitable monster of an archaic typesetting machine, pulling up itty bitty sticky pieces of art for every change made. Rips and smudges later you think...Hey! I could've used PageMaker and been Outta-Here by now!

When choosing an electronic publishing program you should think primarily about your needs and budget. MacPublisher for example, is a viable and less expensive alternative to PageMaker. So the question remains, why should I spend $437 unless I know it will make my publishing life easier ? To this query, PageMaker has the following response:

1) PM costs $437 from the MicroCenter and unnlike Ready-Set-Go and MacPublisher, it is the only program that allows you to open MacPaint, MacDraw (in PICT format only), MacWrite and Word, and paste documents directly onto your working layout. A function called 'Place' under the File menu will copy the text you want and will release the upper left corner of text wherever you position pointer and click.

2) PM has an extensive *Help* function and *Revert* function.

3)*Two* rulers: vertical and horizontal in your choice of inches, millimeters, picas and points. The rulers have a handy zero point of intersection midscreen.

4)A toolbox of tools for selecting text and graphics, making lines and shapes, and cropping graphics.

5)*Fill* functions make borders in the finished publication
or can be used to designate areas of text/graphics in the initial planning stages.

6)At the bottom of the page some icons will keep track of which page number you're on and whether it appers on the left or right hand side of the layout.

8)*Reduce to fit* functions allow you to see your publication two pages at a time. There is also an *actual size* and a *window view*. You can also print out up to 16 thumbnail sketches of your work on an 8 $^{1/2}$x11 single sheet of paper. You can reduce text or graphics 50 or 70 percent or enlarge the material to 200 percent for a more exact placement of a textual or graphic element.

8)If your publication is on both sides of the page you can specify double-sided and PM will automatically shift the inside and outside margins on alternating pages.

9)Master Pages-create repeating elements only once and lock them in place. Useful for column guides, ruler guides and page number marker that keeps page number in place.

For Your Information

A sign up sheet exists for people who wish to buy an upgrade. You have to come in person to the MicroCenter to get your name on the list.

Apple has announced that UT faculty and staff who wish to buy a second computer may do so if the reason they wish to purchase one is that they need one at work and at home. Call the MicroCenter for details.

Many Mac owners are reaching the end of their 2 year agreement prohibiting them from reselling their Macintosh. Please note that while you soon will be allowed to sell your Mac, you will not necessarily be allowed to buy another one. Our contract with Apple limits us to selling one Macintosh per person.

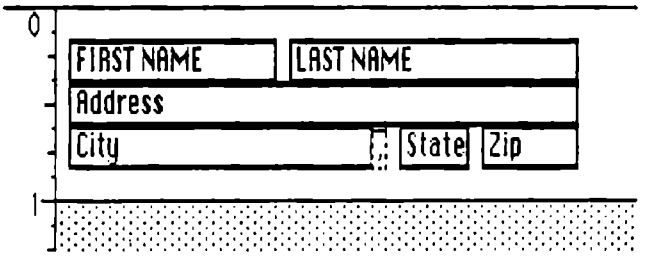
MAILING LABELS

By Joyce McClendon

Included at the end in this article is an example of a mailing label form. For ease of use, we recommend that you create this form and SAVE it (Save As from FILE menu) as Mailing Labels so you can use the form with all of your datafiles.

When you want to use this form with a datafile, choose Show Form (FORM menu), then Open Form (FILE menu). Select Mailing labels from the dialog box and your data will be displayed with the form. Never save your data with this form!

* Mailing labels should be one inch wide.
* Center the data fields vertically within the inch label, as shown above.
* Page Setup
- Set all margins at "0".
- Select mailing labels and deselect grid lines and record numbers.
- Select no breaks between pages.
- Select US letter.
- Check your Page Setup settings before you print to make sure selections are correction.
* Printing
- for Standard quality printing with 9pt characters, you will need to deselect the borders around your data. In the form, select each field and choose Format Field from the FORM menu. Deselect BORDER in the Style box. (See pages 122-123 of your File Manual for information about setting fonts.)
- you can avoid the process described above by printing in draft quality (9pt characters) since this quality will not print borders.
- Start out with the printer head in the middle of the first label. Check the printer frequently to make sure it is printing in the right place.



MICROCENTER MACINTOSH CLASS SCHEDULE - MARCH AND APRIL

Macintosh Orientation: The purpose of this class is to introduce the basic commands that you will use to operate the Mac with the software.

Date	Day	Time	Room
Mar. 6	Thursday	1:00p-2:30p	4.108
Mar. 11	Tuesday	2:00p-3:30p	4.108
Mar.19	Wednesday	10:00-11:30a	4.108
Apr. 1	Tuesday	1:00p-2:30p	4.108
Apr. 7	Monday	1:00p-2:30p	4.108

MacWrite/MacPaint: In this class, we'll show you how to use MacWrite to create documents and templates, organize your files, and use an external disk drive. With MacPaint, you will learn how to use the option, shift and command keys, create animated objects and more!

Date	Day	Time	Room
Mar. 3	Monday	1:00p-2:30p	4.108
Mar. 12	Wednesday	2:00p-3:30p	4.108
Mar. 17	Monday	1:00p-2:30p	4.108
Mar. 25	Tuesday	10:00-11:30a	4.108
Apr. 3	Thursday	10:00-11:30a	4.108
Apr. 10	Thursday	1:00p-2:30p	4.108

MS Word: Is MacWrite not good enough for your particular word processing needs? This class will first introduce the fundamental differences between Word and MacWrite, and will demonstrate such Word exclusives as footnoting, glossaries and multiple column printing.

Date	Day	Time	Room
Mar. 4	Tuesday	2:30p-4:00p	4.108
Mar. 13	Thursday	2:00p-3:30p	4.108
Mar. 20	Thursday	2:00p-3:30p	4.108
Mar. 25	Tuesday	1:00p-2:30p	4.108
Apr. 8	Tuesday	2:00p-3:30p	4.108

Advanced Word Processing: This class will give students a chance to get together and discuss their word processing problems using MS Word and MacWrite.

Date	Day	Time	Room
Mar. 6	Thursday	2:30p-3:30p	4.108
Mar. 18	Tuesday	1:00p-2:00p	4.108
Apr. 3	Thursday	1:00p-2:00p	4.108

MS File: This course will provide introductory instructions necessary to create and work successfully within Microsoft File. Main topics include: creating, working in and editing a data file, in addition to creating a report.

Date	Day	Time	Room
Mar. 4	Tuesday	1:30p-2:30p	4.108
Mar. 10	Monday	1:00p-2:30p	4.108
Mar. 18	Tuesday	2:00p-3:30p	4.108
Mar. 31	Monday	1:00p-2:30p	4.108

Multiplan and Chart: Spreadsheets and charts are the topics of this class! You'll learn how to set up your spreadsheet and link it with Microsoft Chart which can create up to 42 different charts.

Date	Day	Time	Room
Mar. 5	Wednesday	1:00p-2:30p	4.108
Mar. 20	Thursday	10:00a-11:30a	4.108
Apr. 2	Wednesday	1:00p-2:30p	4.108
Apr. 8	Tuesday	10:00a-11:30a	4.108

MS Excel: Since Excel is similar to Multiplan and Chart, it is assumed that you have the basic knowledge of these programs. This class will cover some of the features that are unique to Excel such as macros and data base functions.

Date	Day	Time	Room
Mar. 5	Wednesday	2:30p-4:00p	4.108
Mar. 17	Monday	2:30p-4:00p	4.108
Mar. 24	Monday	1:00p-2:30p	4.108
Apr. 7	Monday	2:30p-4:00p	4.108

MacDraw: Are you ready to go beyond MacPaint? This course will cover the basic usage of this object-oriented graphics package.

Date	Day	Time	Room
Mar. 13	Thursday	1:00p-2:00p	4.108
Mar. 26	Wednesday	10:00a-11:30a	4.108
Apr. 9	Wednesday	1:00p-2:00p	4.108

MacTerminal/VersaTerm: Interested in computer telecommunications? This class will give you an introduction to telecommunciations in general, and specifically it will show you how to get your Macintosh up and running on remote computers.

Date	Day	Time	Room
Mar. 10	Monday	2:30p-3:30p	4.108
Apr. 9	Wednesday	2:00p-3:00p	4.108

MacForum: This is not a class! It is an opportunity to discuss Mac problems, questions and other topics of interest.

Date	Day	Time	Room
Mar.11	Tuesday	3:30p-5:00p	4.108
Apr. 1	Tuesday	2:30p-4:00p	4.108

Big Tricks for the Power Users: Do you want to "really" put your Macintosh to work? This class will provide several helpful hints in using the Switcher and/or a hard disk drive to achieve this goal.

Date	Day	Time	Room
Mar. 12	Wednesday	1:00p-2:00p	4.108
Mar. 19	Wednesday	2:00p-3:00p	4.108
Mar. 31	Monday	2:30p-3:30p	4.108

CLASSES ARE HELD IN THE TEXAS UNION

Microsoft Word™

Microsoft Excel

Microsoft File™

MICROSOFT DEMONSTRATIONS

The MicroCenter will be demonstrating Microsoft Word, Excel and File for the Macintosh on April 7, 1986 from 10:00am-3:30pm in the Sinclair Suite, Texas Union.

On April 8, 1986 from 10:00am-4:00pm we will demonstrate Microsoft Word, Chart, Project, Multiplan and Windows for the IBM in the Board of Directors, Texas Union.

SOFTWARE UPDATES

FOR ALL UPDATES, YOU MUST BRING THE ORIGINAL SOFTWARE DISK!

2.0 MacTerminal

2.0 MacPascal - Bring 1 Extra Blank Disk.

MacDraw 1.9

1.05 MicroSoft Word

1.01 Microsoft File

1.1 Multiplan update information is available through MicroCenter Hotline.

HARDWARE

MACINTOSH PLUS	1545.00
MACINTOSH 512K PERSONAL COMPUTER	1111.00
MACINTOSH NUMERIC KEYPAD	75.00
MACINTOSH EXTERNAL DRIVE	360.00
IMAGEWRITER II PRINTER W ACC KIT	455.00
IMAGEWRITER I W/MAC ACC KIT	222.00
BIZ COMP MODEM 1200 W/MAC ACCKIT	299.00
VOLKS MODEM 1200 W/MAC ACCKIT	185.00
APPLE 1200 PERSONAL MODEM	285.00
MACINTOSH CARRYING CASE (APPLE)	75.00
MACINTOSH CARRYING CASE(DOUGLAS)	60.00
MACINTOSH SECURITY KIT	37.00
3.5" BLANK DISKS (10PK.)	22.00
3.5" BLANK DISKS (5PK.)	11.95
LASERWRITER PRINTER	3700.00

MACINTOSH BUNDLES:

MAC 512K/IMAGEWRITER I /AccKit	1299.00
MACPLUS/IMAGEWRITER I /AccKit/Adptor	1757.00

PERIPHERALS

BOOK–THE APPLE MACINTOSH BOOK	12.00
BOOK–PRESENTATION GRAPHICS ON THE MAC	14.00
BOOK–MACWORK/MACPLAY	14.00
BOOK–JAZZ ON THE MAC	17.15
BOOK–MAC REVEALED VOL. I	18.65
BOOK–MAC REVEALED VOL II	21.55
BOOK–EXCEL IN BUSINESS	13.95
BOOK–MACINTOSH TOOLBOX	15.25
BOOK–PROGRAMMING IN ASSEMBLY	16.50
BOOK-THE PRINTED WORD	10.90
PAPER, 1000 SHEETS, LASER CUT	14.00
PAPER: 2500 SHEETS, LASER CUT,	29.95
CLOTH RIBBON FOR IMAGEWRITER	5.00
KENSINGTON TILT/SWIVEL BASE	25.00
KENSINGTON SURGE SUPPRESSOR	40.00
KENSINGTON AB BOX	64.95
MICRO/FILE 40	11.95
TEAK DISK FILE FOR 3.5" DISKS	19.99
MACSTATION DUST COVER	19.25
MACINTOSH DUST COVER	18.00
COLORED RIBBONS: RD, GR, BLU, BR, YL, PL	7.00
MACSTATION	61.00
MAC CONTROL CENTER	71.95
THE EASEL (DISK CARRYING CASE)	11.00
THE EASEL MINI WALLET	9.95
MOUSEPAD	6.00
DISK HEADCLEANERS	21.95
THUNDERSCAN	169.00
PRINTER STAND (UNIVERSAL)	12.00
OAK PRINTER STANDS	9.95
ADAPTER CABLE 8 PIN TO 9 PIN	13.00

PRODUCTIVITY SOFTWARE

MICROSOFT BASIC	75.00
MICROSOFT MULTIPLAN	99.00
MICROSOFT CHART	65.00
MICROSOFT WORD	99.00
MICROSOFT FILE	99.00
MICROSOFT EXCEL	197.00
DB MASTER FOR THE MACINTOSH	**25.00**
MACTERMINAL (TELECOMMUNICATIONS)	83.00
MACPROJECT	**117.00**
DOLLARS & SENSE	90.95
VERSATERM (TELECOMMUNICATIONS)	72.00
FACTFINDER	83.00
HAYDEN SPELLER	51.95
MACSPELL+	59.00
MACDRAW	83.00
QUICKDISK (A RAM DISK)	25.00
JAZZ	265.00
FILEMAKER	117.00
ACCESSORY PAK I (GRAPHICS TOOLS)	25.95
SIDEKICK	51.00
VIDEOWORKS	64.95
PAGEMAKER	437.00
CONCERTWARE +	49.95

LANGUAGES

MICROSOFT BASIC	75.00
MACINTOSH PASCAL	83.00
MEGAMAX C (COMPILED)	182.16
MICROSOFT FORTRAN (COMPILED)	147.00
68000 DEVELOPMENT SYSTEM (INCLUDES INSIDE MACINTOSH)	83.00

GAMES

SARGON III	32.95
ZORK II	29.95
HITCHHIKER'S GUIDE TO THE GALAXY	25.95
FAHRENHEIT 451	26.79
MACATTACK	31.95
MILLIONAIRE	39.95
BARON	32.95
WIZARDRY	38.95
LODE RUNNER	25.95
MOUSE STAMPEDE	25.95
AIRBORNE	22.95
GATO	32.95

EDUCATIONAL	
TYPING INTRIGUE	29.98
TYPING TUTOR III	36.00
CHIPWITS	29.95
MACEDGE	32.95
SPELLERBEE	47.50

EXTENDED WARRANTIES	
IMAGEWRITER I PRINTER APPLECARE	48.00
IMAGEWRITER II PRINTER APPLECARE	45.00
APPLE MODEM 300 APPLECARE	18.00
APPLE PERSONAL MODEM APPLECARE	18.00
APPLE MODEM 1200 APPLECARE	24.00
MAC 128K APPLECARE	100.00
MAC NUMERIC KEYPAD APPLECARE	18.00
MAC EXTERNAL DRIVE APPLECARE	36.00
MAC 512K APPLECARE	115.00
LASERWRITER APPLECARE	325.00
MACINTOSH PLUS APPLECARE	122.00

Some items may be out of stock.
All prices are subject to change without notice.

Texas Union MicroCenter
210 East 21st Street
(512) 471-6227, Monday-Friday: 9am-4pm